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Crop Watch No. 2001-11, May 25, 2001

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2001-11
May 25, 2001

In winter wheat

Assessing stands and recropping options

Loose seed beds last fall have resulted in poor wheat stands and wheat vigor this spring in some western Nebraska fields. Some wheat fields have been, or soon will be, destroyed. Growers are considering their recropping options for these fields. In most cases, wheat in the destroyed fields had not removed soil water to any great depth and just one or two moderate rainfall events should be sufficient to re-wet the surface soil and permit successful seeding of a spring crop. To minimize water loss, consider using a burndown herbicide such as Roundup Ultra or Touchdown to kill the existing wheat crop and then no-till seed the spring crop into the wheat residue.

A larger obstacle this year to successfully seeding a spring crop into a destroyed wheat field may be herbicide residues in the soil. Many of the herbicides used in winter wheat have long rotation interval

Soybean and corn options

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restrictions. The table (*page 96*) lists recropping options following many of the most commonly used wheat herbicides. Many of the sulfonylurea herbicides have rotation interval restrictions longer than one year. If herbicide rotation restrictions do not permit the seeding of a spring crop this year, consider summer fallowing the destroyed wheat field and planting a spring crop in the fields you were planning

to summer fallow this year. Research conducted in the Nebraska Panhandle found that seeding proso millet into summer fallow fields as a catch crop after hail resulted in significantly better yields than seeding it back into the destroyed wheat field.

Before destroying any crop and planting another crop, contact your Farm Service Agency office and crop insurers.

**Drew Lyon, Extension Dryland
Cropping Systems Specialist
Panhandle REC**

**Robert Klein, Extension
Cropping Systems Specialist
West Central REC**

Early season pests damaging corn; scouting essential

A variety of early season pests are reported to be damaging corn. This reinforces the need to scout for corn insects beginning at crop emergence. Southern corn leaf beetles were reported to be damaging some fields in southeastern Nebraska. There also have been reports of damage from wireworms and cutworms. Previous *Crop Watch* articles this year addressed management of these insects (*see March 23 and May 11 newsletters*).

A somewhat unusual report from Saunders County was of southern corn rootworm (spotted

cucumber) beetles feeding on seedling corn and cutting off plants at the stem.

With the exception of wireworms all these insects can be managed by scouting and use of postemergence insecticides as needed. If the number of cut plants reaches 5% and insects are still present, insecticides may be warranted. With wireworms the only decision to make is whether to replant.

**Bob Wright
Extension Entomologist
South Central REC**

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Field updates

Gary Hall, Extension educator in Phelps County: Planting has been going well, but the hot dry winds have caused some crusting on conventional tilled fields. Some producers were replanting corn last week due to crusting. Moisture is becoming a needed commodity with pivots irrigating many fields as the high winds dry out the surface.

Jennifer Chaky, coordinator of the NU Plant Pest and Disease Diagnostic Clinic: We received several corn samples with possible herbicide injury and problems due to shallow planting or erosion washing away soil. The following diseases were diagnosed May 7 - 18: tan spot in wheat in Red Willow County.

Robert Stritzke, Extension educator in Jefferson County: Jefferson County has experienced considerable damage to pine trees from pine sawfly.

Terry Gompert, Extension educator in Knox County: Most

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ECB moth flight began May 15

The first European corn borer moth flight was detected on May 15 at Clay Center and May 16 at Aurora. Web sites for both locations include moth flight information:

Aurora: <http://www.ianr.unl.edu/ianr/triad/count.htm>

Clay Center: http://screc.unl.edu/Entomology/Lighttrap/2001_LightTrapdata.html

As other light trap web sites become available, they'll be listed on the UNL Department of Entomology web site at <http://entomology.unl.edu/fldcrops/>

Bob Wright
Extension Entomologist
South Central REC

Recropping after wheat (Continued from page 95)

Late spring-seeded crops that may be planted within four months of applying selected winter wheat herbicides.

Herbicide	Crop options	Rotation interval
Ally	None	
Amber	None	
Banvel	All	45 days/pint
Clarity	Field corn, grain sorghum, soybean	Rate and crop dependent – see label for details
Curtail	None	
Express	All	45 days
Finesse	None	
Harmony Extra	All	2 months
Maverick Pro	None	
Peak	Field corn, grain sorghum, proso millet	1 month; Clearfield, IR or IMR field corn hybrids may be planted any time.
2,4-D	Field corn, grain sorghum, soybean	7 to 30 days, see label for details



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Lisa Jasa, Editor

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Weighing the options with soybean

When is replanting the best alternative?

About half of Nebraska's soybean acreage had been planted as of Sunday, May 20, according to the Nebraska Agricultural Statistics Service. This compares with a long-term average of 47% and last year's 79%. In some areas over two-third's of the crop is planted. Considerable planting will occur this week and some producers have already finished planting. To date we have lost little yield potential to late planting.

In contrast to this relatively good news are the unfortunate situations where soybean stands are less than expected because of soil crusting, poor seed quality, or injury from pathogens, hail, frost, and herbicides.

Assessing soybean stands

Several factors must be considered when assessing the minimum stand necessary to achieve reasonable yields. The expected yield loss from the reduced stand must be balanced against the anticipated yield loss from replanting after the optimum planting date (mid to late May). Leaving a poor stand may result in poor weed control or increased herbicide costs. Replanting entails additional costs for seed,

Field updates

(Continued from page 96)

corn has been planted and soybean planting is well underway. About 15% of the alfalfa was winter killed; however the first cutting of what survived looks very good. Total hay harvested this first cutting could be above normal. Insect pressure here is low. So far this year things are looking good. We have good moisture, planting is okay, insects are low, hay crop looks good and cattle prices are good.

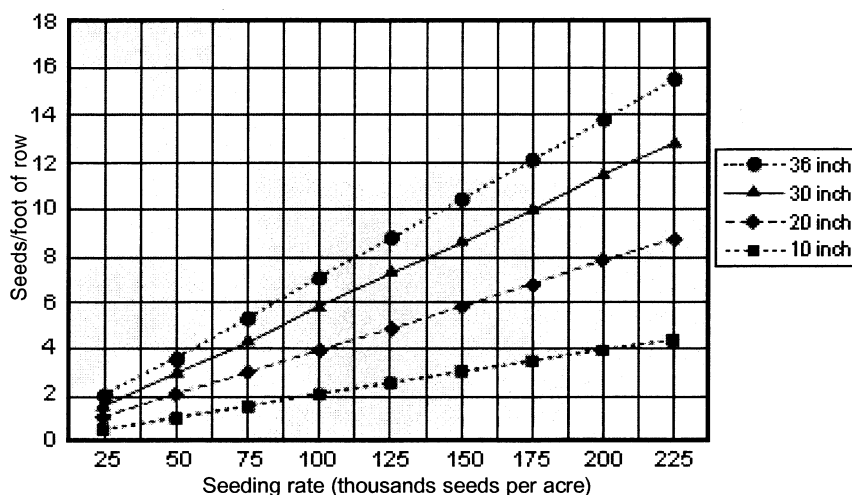


Figure 1. Soybean within-row seed spacing for different seeding rates and row spacings.

tillage, and replanting in addition to the potential yield penalty imposed by a later-than-normal planting date.

Obtaining stand counts is the first step to assessing the field situation. Count plants that have a good chance of recovery. Emerged soybean plants can recover from stem damage if the stem is not severed below the cotyledonary (seed leaf) node. This is the first node on the seedling; the two fleshy-like cotyledons are attached to this node. If still present, buds on each side of this node can produce regrowth. If the plant is broken off below this node, it will not survive.

Once stand counts are established, refer to Figure 1 to estimate plants/acre. For other row widths see the table on determining stand counts on page 98. Although yield is reduced when plant populations fall below 100,000 plants per acre, the yield loss is not proportional to stand loss. A general guideline is to leave a field alone if plant populations are greater than 50,000 plants per acre, the stand is uniform, and the field can be kept weed free. More information on assessing hail

loss in soybeans is in *Soybean Yield Loss Due to Hail Damage*, NU Cooperative Extension NebGuide G762.

Replanting rates

If replanting is necessary, what seeding rates and other practices are recommended? Soybeans planted in June are usually shorter. If you can't plant until then, use a narrow row spacing if possible and higher seeding rates to hasten canopy closure. Faster canopy closure will suppress weeds. Avoid using very early maturing varieties because they will flower quickly, resulting in short plants. Tall, medium maturing varieties for your area offer the best hope of minimizing potential yield loss from planting late. These recommendations apply to double-cropped soybeans as well.

Recommended soybean seeding rates, stand assessment and replanting rates based on Nebraska field research are discussed in *Soybean Seeding Rates*, NU Cooperative Extension NebGuide G99-1395.

Roger Elmore
Extension Crops Specialist
South Central REC

Crop-sized ring toss simplifies counts

Some producers may be thinking that their stand looks thin and are wondering if they should replant. The "ideal" stand depends on productivity of the soil, available moisture throughout the growing season, management ability, and many other factors. However, depending on the crop, it may be getting late enough in the season that replanting a thin stand may not be a good option. The yield loss because of late planting may be more than the reduction due to a less-than-ideal stand. An accurate stand count is needed to make an informed, cost-effective decision.

The actual plant population can be checked by counting the plants in a known area, usually 1/1,000 of an acre. With row crops, measure out a length of row to equal 1/1000 of an acre (*see table*), count the plants, and multiply by 1,000 to get the population. For example, 28 plants in 17 feet 5 inches of a 30-inch row would be 28,000 plants per acre. This would be fine for corn but rather thin for soybeans.

Length of row to equal 1/1000 of an acre for various row spacings.

Row spacing	Row length
15"	34' 10"
19"	27' 6"
30"	17' 5"
36"	14' 6"
38"	13' 9"

With drilled crops, the length of row to equal 1/1000 of an acre gets to be quite long (ie: 69 feet 8 inches for 7.5-inch rows) and it is sometimes difficult to identify the row. To avoid these problems, many producers toss a hula-hoop to define the known area when counting plants in drilled fields. When you know the area encircled by the hula-hoop, you can use the appropriate calculations to estimate population.

The "standard" toy hula-hoop is usually either 30 or 36 inches in diameter, not a convenient-sized known area. However, a circle with an inside diameter of 40 inches will encircle a known area of 1/5,000 of an acre. By taking plant counts within a 40-inch circle at five random locations in the field, 1/1,000 of an acre will be counted. The five separate counts reduce the variability of the sample by providing an average.

A 40-inch hoop (**inside diameter**) can be easily made from a 10-foot 9-inch length of 1/2-inch black plastic water pipe and a double male hose barb connector (trim hose

length depending on connector style). This will make a fairly rigid "oversized hula-hoop" which encircles 1/5,000 of an acre. A "fold-up" portable version can be made from a 10-foot 7.5-inch length of 3/8-inch EVA plastic hose (anhydrous ammonia hose) and the appropriate barbed connector. This flexible hoop can be "folded" by grasping opposite sides of the hoop and curling it up with a twist of the wrist. A three-coiled hoop is formed (similar to a folded V-belt) which will easily fit under the pickup seat.

Paul Jasa
Extension Engineer

Soil erosion exposes corn roots; plant needs time, moisture

The NU Plant and Pest Diagnostics Clinic this week received samples of corn seedlings which had blown over in the field.

The plants were about 8 inches tall and at the V2 stage. They appear to have been planted at the right depth originally, although the crown is now above the soil surface. While the seeds, roots around the seed and plant appear healthy, brace roots have not developed. Recent rains likely eroded the topsoil away to a level below the crown.

While the temptation may be to cultivate and throw soil up over the crown, that is not advisable, and would very possibly do more harm than good. If the soils are crusted, cultivation may not lead to good plant/soil contact. While the plants are currently healthy, they are relatively vulnerable. Throwing dirt clods at the plant bases may actually injure the plants and provide an entry source for pathogens. In addition, such situations likely occurred on erodible hilly fields where cultivation may just set up

the field for continued erosion with the next rain, placing the plant in even worse condition. At the V2 stage, cultivation is likely to cause more physical damage than protection of the plant.

A better strategy would be to give the plant and the weather a little time. The last week of moist, cool, cloudy weather has been ideal for plant recovery. If the crown is in contact with moist soil, it will likely set crown roots eventually and the plant will right itself.

While little can be done now to rescue these plants, next year cultural practices on highly erodible land could be adjusted to include more conservation tillage practices to maintain residue on the soil surface. With highly erodible, rolling topography, we would strongly recommend implementing no-till practices.

Bob Caldwell
Cropping Systems Specialist
Jennifer Chaky
Coordinator of the NU Plant
Pest and Disease Diagnostic Clinic

Using the PSNT for spring testing of nitrogen availability from applied manure

One of the unknowns about manure application is how quickly the nitrogen is released from the organic component of the manure. Soil temperature, moisture and aeration influence this rate. Usually most nitrogen is released from manure in late spring when conditions are best for release.

The Presidedress Nitrate Test (PSNT) for corn was developed to test for nitrate nitrogen that becomes available in late April and May. This nitrogen is not found in fall, winter, or early spring soil tests.

The University of Nebraska has not yet published specific recommendations for the PSNT, but guidelines developed by Iowa State University may be used. Their guidelines are available in *Nitrogen Fertilizer Recommendations for Corn in Iowa*, ISU Cooperative Extension publication Pm-1714, which is available on the web at <http://www.extension.iastate.edu/Publications/PM1714.pdf>

NU researchers have been part of a multi-state effort to verify the validity of the PSNT test. Researchers took soil samples both before the season and in spring when the PSNT would be used. Nitrogen was applied and yields were measured. After the season they determined if the preplant and presidedress treatments recommended the correct amount of nitrogen.

Dr. Dan Walters, NU soil scientist, has summarized some of the findings from this North Central Region research by categorizing the error rate associated with both preplant soil tests and the presidedress nitrogen test. Dr. Walters grouped the results of field tests into two types of errors. Type A errors were those where too little nitrogen was recommended and Type B errors were those where too much nitrogen was recommended.

Results collected over a number

Table 1. Comparing the performance of preplant and presidedress soil nitrate tests for the North Central Region. (Dan Walters, 25th North Central Extension Industry Soil Fertility Conference. St. Louis, Missouri)

Time	Depth ft.	N	Soil test failure rates		
			Total	A	B
			– Percent of sites –		
Preplant	0-1	292	36	1	35
Preplant	0-2	292	30	7	23
Presidedress	0-1	301	28	2	25
Presidedress	0-2	239	23	5	18

Table 2 Nitrogen fertilizer recommendations for manured soils* and corn after alfalfa. (ISU Cooperative Extension publication, *Nitrogen Fertilizer Recommendations for Corn in Iowa*).

Grain and fertilizer prices	Soil test nitrate ppm N	Recommended N rate	
		Excess**	Normal
		Rainfall	Rainfall
		----- lb. N/acre -----	
Unfavorable	0-10	90	90
(1 bushel buys	11-15	0	60
7 lb. of nitrogen)	16-20	0	0***
	> 20	0	0
Favorable	0-10	90	90
(1 bushel buys	11-15	60	60
15 lbs. of nitrogen)	16-25	0	30
	> 25	0	0

* A field should be considered manured if animal manures were applied with a reasonable degree of uniformity since harvest of the previous crop or in two of the past four years.

**Rainfall should be considered excess if rainfall in May exceeded 5 inches.

*** Adding 30 lb N/acre may have no detectable effects on profits, but producers could reasonably elect to apply this rate.

of years from 200-300 sites indicated a failure rate of 18%-35% (Table 1) depending on the test used and the depth. This would not be a very effective test, except most of the errors were Type B where the test over-recommended nitrogen. This data indicates that when using both the preplant and presidedress nitrate tests, there is a low likelihood of under-recommending nitrogen.

Using the presidedress nitrate test

Sample corn when it is 6 to 12 inches tall or in late May to early June. Sample from field areas that are similar and 10 to 20 acres in size. Sample either 0-1 or 0-1 and 1-2 feet. The deeper tests have a lower overall error rate, but a slightly higher Type A error rate. Have nitrate tests run on both samples.

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NU's *Market Journal* returns June 14 with new ag discussion shows twice a month

The University of Nebraska agricultural issue and discussion program, *Market Journal*, will return to regular production June 14.

This year's shows will include ag policy issues and producer-to-producer tips on livestock marketing as well as its core topics of risk management and steps to increase farm and ranch profits. The interactive satellite and Internet series is produced by NU Cooperative Extension.

Two editions of *Market Journal*

will be broadcast each month. The first show will be offered live at 21 sites from 8 to 9 p.m. CT the second Thursday of every month from June through December. This edition also will be carried on Lincoln's Time-Warner cable television system Channel 21.

Extension educators and representatives from the Nebraska Grain and Feed Association will lead discussion at the sites. Extension will encourage marketing clubs to develop among participants.

Materials will be provided through a grant from the U.S. Department of Agriculture Risk Management Agency "so producers can work together as a team, helping each other with marketing," said Jim Randall, an NU communications specialist.

The second show will be available on the web after 8 p.m. on the fourth Thursday of every month at marketjournal.unl.edu. All shows will be archived on the web site for later viewing.

Doug Jose, NU farm management specialist, will host the discussion with invited guests and regular participants. Roy Smith, a corn and soybean producer from Plattsmouth, will return to provide grain market updates and analyses along with Lynn Lutgen, NU grain marketing specialist. Livestock issues will be covered by Harry Knobbe, a West Point cattle feeder, and Al Prosch, coordinator of Pork Central at NU's IANR. Other speakers include Roy Frederick, NU policy specialist; Al Dutcher, NU state climatologist, and grain elevator merchandisers.

This year's program will include: feature stories, such as an analysis of how Nebraska's Initiative 300 is affecting the state's agriculture. Other topics will include financial management tips on marketing, farm labor, and crop insurance; and marketing tips from grain merchandisers. Upcoming topics and speakers will be announced in *Crop Watch* throughout the year.

Registered viewers will be eligible for drawings for several prizes, including a subscription to Roy Smith's *Farmer to Farmer Seasonal Strategies* newsletter and two Palm Pilot handheld electronic computers.

Viewing sites are:

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Nitrogen testing (Continued from page 99)

This test works best if previous fertilizer application bands are avoided. Try to avoid starter and anhydrous ammonia bands. Take 20 cores per sample.

Interpretation of results

While Nebraska has not published specific instructions for this stage, other states have published the following:

Iowa method

Iowa has the most specific recommendations (see Table, page 99). They are based on the price of corn and nitrogen, spring rain and the PSNT results.

This year with corn at about \$2/bu and nitrogen over \$0.25/lb, use the upper section of the table. This table should be used for fields with manure or alfalfa history. For fields in continuous corn or corn following soybeans, Iowa recommends subtracting the soil nitrates from 25 ppm (critical level) and multiplying the difference by 8. For example, with a soil test of 18 the nitrogen recommendation would be: $25 - 18 = 7 \times 8 = 56$ lbs N/acre.

Wisconsin method

Wisconsin uses a different system. They base their recommen-

dation on the yield potential of the soil. Their critical level is 21 ppm nitrate-N. The amount they recommend per ppm below their critical level is 15 for high producing soils and 8 for low producing soils. They recommend the same nitrogen rate for all soils below 10 ppm nitrate-N.

Recommendations

Sample fields with high likelihood of having high nitrate concentrations: manured fields and those with alfalfa last year. If soil tests come back over 23 ppm, there is probably no need for additional nitrogen. The NU nitrogen algorithm is not designed to be used with the PSNT numbers. The NU recommendation system (see the March 2 *Crop Watch*) is based on preplant nitrogen tests taken to 3 feet; however, the algorithm does give eight pounds of nitrogen credit for each ppm nitrate. Probably the correct value will fall between the Iowa and Wisconsin numbers of 8 and 15 lbs of nitrogen per ppm nitrate under the critical value.

Charles Shapiro
Extension Soils Specialist
Northeast REC, Haskell Ag Lab
Dick DeLoughery, Water Quality
Education Coordinator
Northeast REC

Summer tours feature variety of sustainable agriculture systems and marketing methods

The Nebraska Sustainable Agriculture Society sponsors farm tours each summer to showcase how sustainable farming practices are being used in different areas of Nebraska. The public is invited to these tours and learn about the diversity of farming enterprises in Nebraska.

June 20, 5 p.m., John and Susie Ellis' Libby Creek Farm, York – A Summer Solstice Celebration. Join the fun for the farm tour and post-tour picnic. The Ellises sell their produce at several farmers' markets, operate a community supported agriculture farm, and are completing a certified on-farm kitchen. Directions: From the U.S. 81 & I-80 interchange, go 1/2 mile south to Himark Texaco, then 4 miles west. The farm is on the north side. 402-362-2630

June 23, 9 a.m., Grass-Health & Bison Tour with Dave Hutchinson, Rose – See management intensive grazing of buffalo on organic grass at Hutchinson's Perfect 10 Ranch. View how they practice natural fly control and natural animal health care. Nationally recognized speakers will present information on health benefits relating to grass-fed buffalo meat. Contact Dave at 402-273-4574 to pre-register by June 15. Directions: Take Highway 183 to mile marker 151, turn west and travel 7 miles to the blue mailbox and sign, which reads Hutchinson Buffalo Ranch, turn left and follow the road 2 miles back to ranch.

July 14, 8 a.m., The Grain Place, Inc., Marquette – Dave Vetter and staff will be opening their organic farm and grain-processing center for tours and workshops. In the morning you can tour the fields and talk with them about extensive grazing rotations. In the afternoon, there will be workshops/presenta-

tions on various aspects of the farm and products. Register by July 7 to insure a delicious organic meal. For registration and/or more information call 402-854-3195.

August 4, 10 a.m., Bryce Grothe, Uehling – Bryce Grothe, "the Clean Farmer", will host a tour of his organic farm and will give a demo on combine cleanout. There will be several combines to use in discussions on how to document cleanout procedure between harvesting buffer strips and certified crops. OCIA members are encouraged to attend this tour and the following board meeting. Directions: take Highway 77 to the north edge of Uehling, then go 4 1/2 miles east on county line road E/A to the farm on the south side of the road. For more information call 402-727-5927.

August 6, 10 a.m., Tom Larson, St. Edward. Larson, who was recently honored by the National Smithsonian Institution as well as USDA's Sustainable Agriculture Research and Education (SARE) program, will show his intensive management of a variety of grain and grazing crops, as well as the integration of cattle and chickens into his whole farm plan. Directions: from the St. Edward Co-op gas station, go 4 blocks north, two blocks west, two blocks north, and 1/2 block west. Follow this road 1 1/2 miles northwest out of town to the Larson farm on the west side. For more information call 402-678-2456.

August 24, 1 p.m. registration, tour at 2 p.m., Dennis Demmel, Ogallala. Demmel will discuss his modified ridgetill system for corn, soybeans, wheat, sunflowers, forage peas, and legumes in dryland and irrigated production with reduced herbicides. The tour also will feature field windbreaks and

composting systems. Directions: from Ogallala, go 10 miles south on Hwy 61 (2 miles south of the Keith/Perkins County line) and 1/2 mile west. From Grant, go 9 miles north on Hwy 61 and 1/2 mile west. For more information call 308-352-4078.

August, Mike Chandler, Anselmo – This tour is the field portion of Chandler's presentation at the 2001 Healthy Farms Conference. Chandler is building organic matter and fertility into his organic farmland using sweet clover and bees. Tours will include the irrigated and dryland sweetclover, beekeeping operation, and honey processing facility. The exact date will be noted in an upcoming *Crop Watch*, or call 308-749-2267 for more information.

September 11, 5 p.m., Paul and Cyndie Rohrbaugh, Steinauer – The Rohrbaughs operate a sustainable, chemical-free, grass-based livestock operation. The tour will feature pastured poultry, management intensive grazing, free-range layer flocks, and their poultry processing unit. Directions: from Tecumseh go south on Highway 50 to the Steinauer turnoff, then go west to the west edge of Steinauer, then 1/2 mile north, and 3/4 mile west. For information call 402-869-2396.

October, Kevin and Charuth Loth, Shadow Brook Farm, Denton – The Loths have a certified organic produce farm with some small livestock. The tour will include their greenhouse, fields, washing facility, and roadside market. There will be discussions about their farmer's market, CSA, and organic farming experiences and their plans for the future. Directions: west of Lincoln at 2201 Denton Road. For information call 402-420-2283.

Bob Wright, Extension Entomologist, South Central REC

Identify critical period of weed control for most cost effective herbicide applications

With all the advances of herbicide tolerant soybean, there is still the constant dilemma of how best to time postemergence weed control. As we discussed earlier with corn, there is a need to determine the **critical period of weed control**. This is the time in the crop growth cycle when weeds must be controlled to prevent yield losses. Weeds emerging before or after this period may not present a threat to crop yields. This information is essential in determining the need for and timing of weed control and for achieving efficient use of herbicides.

Research at the University of Nebraska has shown that each crop has a critical period during which weeds must be controlled to maintain maximum yields. The length of this period can be affected by several variables, for example, row spacing in soybean.

Time of weed removal as affected by soybean row spacing

Studies were conducted in 1999 at Mead and in 2000 at Mead and Concord to determine how row spacing affected the critical period of weed control. Predominant weed species at both locations/years were velvetleaf, common waterhemp and green foxtail, with the densities ranging from 70-100 plants per square yard.

Generally, an increase in row spacing resulted in a need for earlier weed removal and thus, a less competitive crop. For example, the beginning of the critical period of weed control in wide-row (30-inch) soybean was approximately at the 1st trifoliate stage, based on a 5% acceptable yield loss level (Table 1). This suggests that in wide-row soybeans the control measure should start early in the season (at the 1st trifoliate stage). Beginning of the critical period of weed control in 15-inch rows was delayed and corresponded approximately to the 2nd

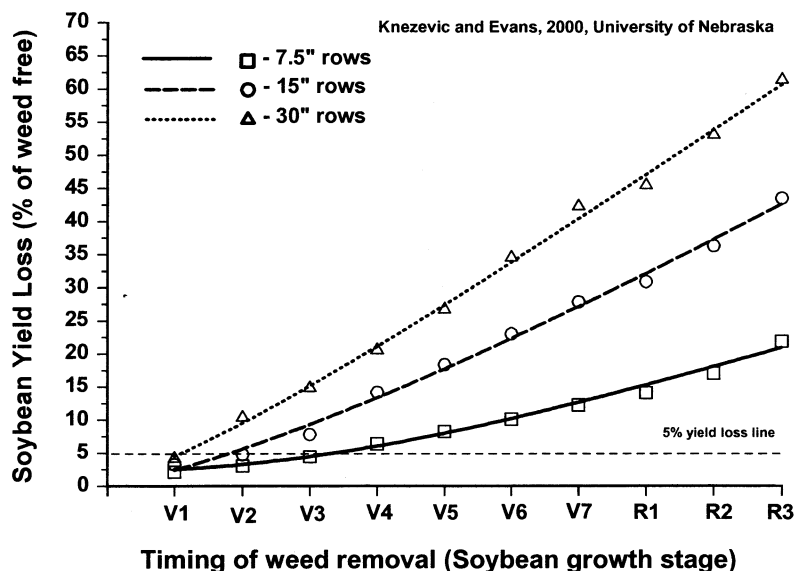


Figure 1: Soybean yield loss and beginning of CPWC as influenced by the timing of weed removal and row spacing.

trifoliate stage, compared to the 3rd trifoliate stage in soybean grown in the 7.5-inch rows (Table 1).

This data implies that reducing row spacing delayed the onset of weed competition and increased the tolerance of soybean to weed presence. The mechanism of soybean tolerance needs to be determined yet, although we believe it is related to the crop shading effects. The speculation is that even though the weeds are present in the narrow row soybeans they are not growing as vigorously and they are not as

competitive against the crop, due to crop shading effects. Furthermore, from a practical standpoint, these results indicate that a reduction in soybean row spacing increases soybean tolerance to weeds and may require less intensive weed management programs (eg. weed control measures applied once rather than twice).

Cost of delaying weed control

The commonly asked question among producers is "how much is it

(Continued on page 103)

Table 1. The beginning of the critical period of weed control (CPWC) in soybean based on 5% yield loss expressed as crop leaf stage (eg.V1) and days after crop emergence as affected by the row spacing, at two locations in 1999 and 2000.

Row spacing inches	Start of CPWC Soybean leaf stage	Start of CPWC Days after crop emergence
7.5	V3	19
15	V2	15
30	V1	9

Critical timing *(Continued from page 102)*

going to cost me if I delay weed control"? Possible reasons for delaying weed control may include weather constraints (rainfall, wind), and time constraints due to a large number of acres to spray.

Figure 1 illustrates the relationship between crop yield and timing of weed removal. The 2% yield loss for every leaf stage of delay past the critical stage of weed control, was determined as the cost of delaying weed control in soybean. For example, the time to control weeds in 7.5-inch-row soybean is the V3 stage (*third trifoliate*, see Table 1). If weed control is delayed to the V4 (fourth trifoliate), it will cost a producer about 2% in yield losses due to prolonged competition from weeds. The same is true if weed control is delayed past the recommended critical time in other soybean row spacings (Table 2). This recommendation is applicable up to the R3 stage in soybean (beginning pod). If the weed control is delayed further than these indicated stages, yield losses will be much higher than suggested.

In terms of actual economic losses in soybean, it will be about \$5 per acre for every soybean leaf stage of delay, assuming a price of \$5 bushel and a yield goal of 40 bushels.

Weed size

Weed size at the time of weed control is another concern. If weeds emerge four to five days before the crop or if they are taller than the crop, they will shade the crop. Control measures should be initiated four to five days (one to two leaves) prior to the normal beginning of the critical period of weed control. If the weeds emerge 5-10 days after the crop, they will not shade the crop that early in the season so control can be initiated 5-10 days (two to three leaves) after the beginning of normal critical period.

The size of weed species also will affect herbicide use rates,

especially the rates of glyphosate in Roundup-Ready soybeans. It is well known that glyphosate has much better activity on grassy rather than broadleaf species. Normal recommended rates should provide control of most common annual grassy species (foxtails, barnyardgrass, field sandbur, woolly cupgrass, panicums) that are 3-8 inches tall and control annual broadleaves (velvetleaf, lambsquarters, pigweeds, mustards) that are less than 6 inches tall. For

taller grasses and broadleaf species a full rate of 26-32 ounces will be required. Higher rates of glyphosate (40-60 ounces) may be needed to control species such as ivy-leaf morning-glory, sweet clover, field bindweed, Venice mallow and various smartweed species (lady's thumb, Pennsylvania smartweed, wild buckwheat, etc).

Stevan Knezevic
Extension Weeds Specialist
Northeast REC, Haskell Ag Lab



Wheat variety tours to be held June 18-July 2

Producers can view and compare wheat varieties at University of Nebraska Wheat Plot tours to be held throughout the state in June and early July. Sites may feature speakers or programs so contact the Extension educator in the hosting county for further information.

- June 18**, 7 p.m., Furnas County, 5 miles east of Arapahoe, 3 miles north, 0.5 west
- June 19**, 7 p.m., Hitchcock County, mile marker 61.2 on Hwy 34 east of Trenton
- June 20**, 7 p.m., Keith County, 3 miles north and 8 miles west of Ogallala
- June 21**, 3 p.m. Perkins County, 4 miles north, 4 miles west and 0.5 north of Grant
- June 21**, 8:30 a.m., High Plains Ag Lab Field Day, 6 miles north of Sidney
- June 21**, 3 p.m., Cheyenne County, from Gurley, 12 miles west on Rd 46, 2 miles north, 1.4 miles west, and 0.1 mile northeast along circle
- June 21**, 6:30 pm, Kimball County, I-80 interchange #29 at Dix, 5 south to Rd 22, then east 0.3
- June 22**, 10 a.m., Box Butte County, 2 miles north of Alliance on Hwy 2, 1.3 miles west, 0.5 miles north
- June 25**, 9:30 am, Scotts Bluff County, 4 miles south of Stegall, 1.5 miles west
- June 25**, 3 p.m. Albin, Wyoming, irrigated, from Wyoming 215, west on road 227, south on road 159, west on road 225, north on road 156 (unimproved) and 0.5 miles south side of second pivot to the east.)
- June 27**, 8 a.m., Adams County, three miles north of Bladen.
- July 2**, 2 p.m., Sheridan County, 5 miles east of Rushville to Airport Road, 1 mile north

Cool, wet weather brings out resilient fungi in soybean fields

In a "normal" year in Nebraska, soybean seedling diseases always occur somewhere. With this week's cool, wet weather, I suspect we may be seeing more widespread soybean seedling disease problems.

The most common fungi involved in seedling diseases in Nebraska are species of *Fusarium*, *Phytophthora*, *Pythium*, and *Rhizoctonia*. All four can kill soybean seedlings or at least cause yield-limiting damage. Diagnostic characteristics of common soybean seedling diseases are described in *Damping Off, Root Rots, and Vascular Disorders of Soybean*, Extension Circular EC99-1877. Cool, wet weather favors a couple of our most common fungi that cause seedling disease and are likely to be a problem this year: *Pythium* and *Fusarium*. Both of these fungi form resistant survival structures and wait for weather conducive to disease development to cause problems.

Fusarium root rot is caused by *Fusarium solani* and *Fusarium oxysporum*. Infections usually occur early in the season when cool temperatures favor disease development. The disease becomes most destructive when soil temperatures are between 57°F and 75°F and fields are saturated with moisture (57°F optimum).

Look for discoloration of the taproot and lateral roots with a reddish color or dark brown color depending on the species of *Fusarium* involved. *Fusarium* root infections usually start at the lower portion of the root system in contrast to *Rhizoctonia* root rot, which usually starts at the soil line and extends down to the root system. Root systems of severely infected young plants may be nearly destroyed. Older plants are seldom killed but will wilt quicker than healthy plants when soil moisture is low. Poor stands caused by *Fusarium* spp. are usually associated with poor

seed quality, heavy rains, soil compaction, or wet soils after planting.

At least five species of *Pythium* cause seed decay, damping off, and root rot of soybean. Although these fungi are capable of infecting the soybean plant at any developmental stage, early infections on seedlings are the most damaging. Seed rot and seedling diseases caused by *Pythium* spp. develop early in the season under cool temperatures and wet soil conditions. In cool (50°F to 60°F) wet soil, they, like *Phytophthora*, produce zoospores that move through soil water to seed or roots where they infect the plant. Seedlings are the most susceptible to infection and the soybean plants become progressively more resistant as they age.

Look for seeds rotted in the soil that are soft and slimy to the touch or overgrown with other fungi and bacteria, giving the seed a fuzzy appearance. Infections that cause seedling blights occur after the seed has germinated but before or just after emergence. Infected roots are brown and appear wet, or they may have brown lesions on the hypocotyl. If seedlings are infected after emergence, leaves have a gray-green cast, wilt and die within a day or so.

If these problems have developed in your fields, you're probably wishing that you had treated your soybean seed. Nonetheless, if you have to replant into a field with a stand problem, make sure to apply a fungicide so you don't have the same problem twice in the same year. A list of seed-applied fungicides and their activity is in NU Cooperative Extension NebFact, *Seed Treatment Fungicides for Soybeans*, NF00-411. If you're not sure which fungus is causing the problem this year, use a good combination product with broad spectrum activity.

Loren J. Giesler
Extension Plant Pathologist

Market Journal

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Albion – Boone County Cooperative Extension office, 220 S. Fourth St.

Alliance – Alliance High School Administration Building

Aurora – Hamilton County Cooperative Extension office, Courthouse

Bridgeport --Community Center, 425 N. Main St.

Broken Bow – Broken Bow High School, 323 N. Seventh Ave. (use east door)

Columbus – Central Community College, Platte Campus, 4500 N. 63rd St.

Concord – NU Haskell Agricultural Laboratory, 57905 866th Rd.

Falls City – USDA Service Center, North Barada St.

Geneva – Geneva Public Library, 1043 G St.

Kearney – Buffalo County Cooperative Extension office, Fairgrounds, 1400 E. 34th St.

Lexington – Dawson County Cooperative Extension office, Courthouse, Sixth and Washington streets (use south door)

Long Pine – Continuing Education Building (old school)

Mead/Ithaca – NU Agricultural Research and Development Center, 1071 County Rd.

Neligh – Antelope County Cooperative Extension office, Courthouse Annex, 501 Main St.

Norfolk – Lifelong Learning Center, Northeast Community College Campus

O'Neill – Holt County Cooperative Extension office, Courthouse Annex, 128 N. Sixth St.

Ord – Valley County Cooperative Extension office, Fairgrounds

Red Cloud – Webster County Museum, Exhibit Building, 721 W. Fourth Ave.

Syracuse – Otoe County Cooperative Extension office, 180 Chestnut St.

Tekamah – Tekamah City Offices, 1315 K St.

West Point – Cuming County Cooperative Extension office, courthouse

York – York County Cooperative Extension office, 2345 Nebraska Ave.

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